

Application No. 10/719,424  
Amendment dated January 8, 2007  
Reply to Office Action of September 19, 2006

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. (currently amended) An apparatus for insertion within an implantation space formed across the height of a disc space between vertebral bodies of a human spine, said apparatus comprising:
  - an expandable spinal implant having upper and lower portions adapted to move apart from one another to contact adjacent upper and lower vertebral bodies, respectively, said implant having an end having an opening, each of said upper and lower portions having a recess; and
  - an implant end cap having a head configured to cooperatively engage said end of said implant to at least in part cover said opening, said head having a top surface and a bottom surface opposite said top surface, said bottom surface having at least one protrusion adapted to cooperatively engage said recesses of said upper and lower portions of said implant to prevent said implant from expanding beyond a predetermined height by limiting movement of said upper and lower portions relative to one another, said implant end cap being rotated to engage said at least one protrusion and said recesses.
2. (original) The apparatus of claim 1, wherein said head is configured to cooperatively engage said end of said implant to completely cover said opening.
3. (original) The apparatus of claim 1, wherein said implant has a plurality of bone screw holes, said bottom surface of said head being configured to cover at least a portion of one of said bone screw holes when said cap is engaged to said implant.
4. (original) The apparatus of claim 3, wherein said bottom surface of said head is configured to cover a portion of more than one of said bone screw holes when said cap is engaged to said implant.

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5. (original) The apparatus of claim 3, wherein said head is configured to allow the insertion of a bone screw into said implant after said cap is engaged with said implant.
6. (original) The apparatus of claim 3, wherein said head has a perimeter that is configured to permit the insertion of a bone screw into one of said bone screw holes after said cap is engaged with said implant, said head being movable to cover at least a portion of the bone screw after the bone screw is inserted in one of said bone screw holes.
7. (original) The apparatus of claim 1, wherein said upper and lower portions of said implant include at least one opening adapted to communicate with one of the adjacent vertebral bodies, said openings in said upper and lower portions being in communication with one another and adapted for permitting for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant.
8. (original) The apparatus of claim 7, wherein said implant includes a hollow interior for holding bone growth promoting material, said hollow interior being in communication with at least one openings in each of said upper and lower portions.
9. (original) The apparatus of claim 1, wherein said implant is in combination with a bone growth promoting material.
10. (original) The apparatus of claim 9, wherein said bone growth promoting material is selected from one of bone, bone derived products, demineralized bone matrix, ossifying proteins, bone morphogenetic protein, hydroxyapatite, and genes coding for the production of bone.
11. (original) The apparatus of claim 1, wherein said implant is treated with a bone growth promoting substance.
12. (original) The apparatus of claim 1, wherein said implant comprises at least one of the following materials: metal, titanium, plastic, and ceramic appropriate for implantation in the human body.

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13. (original) The apparatus of claim 1, wherein said implant is at least in part resorbable.
14. (original) The apparatus of claim 1, wherein said implant is formed of a porous material.
15. (original) The apparatus of claim 1, wherein said implant is in combination with a material adapted to inhibit scar formation.
16. (original) The apparatus of claim 1, wherein said implant is in combination with an antimicrobial material.
17. (currently amended) An apparatus for insertion within an implantation space formed across the height of a disc space between vertebral bodies of a human spine, said apparatus comprising:
  - an expandable spinal implant having upper and lower portions adapted to move apart from one another to contact adjacent upper and lower vertebral bodies, respectively, said implant having an end having an opening, each of said upper and lower portions having at least one protrusion; and
  - an implant end cap having a head configured to cooperatively engage said end of said implant to at least in part cover said opening, said head having a top surface and a bottom surface opposite said top surface, said bottom surface having a recess adapted to cooperatively receive said protrusions of said upper and lower portions of said implant to prevent said implant from expanding beyond a predetermined height by limiting movement of said upper and lower portions relative to one another, said implant end cap being rotated to facilitate receipt of said protrusions in said recess.
18. (original) The apparatus of claim 17, wherein said head is configured to cooperatively engage said end of said implant to completely cover said opening.
19. (original) The apparatus of claim 17, wherein said implant has a plurality of bone screw holes, said bottom surface of said head being configured to cover at least a portion of one of said bone screw holes when said cap is engaged to said implant.

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20. (original) The apparatus of claim 19, wherein said bottom surface of said head is configured to cover a portion of more than one of said bone screw holes when said cap is engaged to said implant.
21. (original) The apparatus of claim 19, wherein said head is configured to allow the insertion of a bone screw into said implant after said cap is engaged with said implant.
22. (original) The apparatus of claim 19, wherein said head has a perimeter that configured to permit the insertion of a bone screw into one of said bone screw holes after said cap is engaged with said implant, said head being movable to cover at least a portion of the bone screw after the bone screw is inserted in one of said bone screw holes.
23. (original) The apparatus of claim 17, wherein said upper and lower portions of said implant include at least one opening adapted to communicate with one of the adjacent vertebral bodies, said openings in said upper and lower portions being in communication with one another and adapted for permitting for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant.
24. (original) The apparatus of claim 23, wherein said implant includes a hollow interior for holding bone growth promoting material, said hollow interior being in communication with at least one openings in each of said upper and lower portions.
25. (original) The apparatus of claim 17, wherein said implant is in combination with a bone growth promoting material.
26. (original) The apparatus of claim 25, wherein said bone growth promoting material is selected from one of bone, bone derived products, demineralized bone matrix, ossifying proteins, bone morphogenetic protein, hydroxyapatite, and genes coding for the production of bone.
27. (original) The apparatus of claim 17, wherein said implant is treated with a bone growth promoting substance.

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28. (original) The apparatus of claim 17, wherein said implant comprises at least one of the following materials: metal, titanium, plastic, and ceramic appropriate for implantation in the human body.
29. (original) The apparatus of claim 17, wherein said implant is at least in part resorbable.
30. (original) The apparatus of claim 17, wherein said implant is formed of a porous material.
31. (original) The apparatus of claim 17, wherein said implant is in combination with a material adapted to inhibit scar formation.
32. (original) The apparatus of claim 17, wherein said implant is in combination with an antimicrobial material.
33. (original) A method for expanding an expandable spinal implant having an end, the method comprising the steps of:
  - providing an end cap having a stem projecting therefrom;
  - inserting at least a portion of the stem of the end cap into the end of the implant while the implant is in a collapsed position; and
  - rotating the stem of the end cap less than one full turn to expand the implant from the collapsed position to an expanded position.
34. (original) The method of claim 33, wherein the step of rotating the stem includes rotating the stem approximately 90 degrees.
35. (original) The method of claim 33, wherein the step of rotating the stem includes rotating a stem having no threads.
36. (original) The method of claim 33, further comprising the step of locking the cap to the implant.
37. (original) The method of claim 33, further comprising the step of locking the implant in an expanded position.
38. (original) The method of claim 33, wherein the implant has a plurality of bone screw holes, further comprising the step of covering at least a portion of the bone screw holes with at least a portion of the end cap.

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39. (original) The method of claim 33, further comprising the step of inserting at least one bone screw in the implant after the stem of the end cap is inserted into the end of the implant.
40. (original) The method of claim 33, wherein the end of the implant includes an opening leading to an interior hollow having a bone growth promoting material therein, further comprising the step of covering at least a portion of the opening with the end cap.
41. (original) The method of claim 33, wherein the step of inserting includes inserting a non-threaded stem into the end of the implant.
42. (new) An apparatus for insertion within an implantation space formed across the height of a disc space between vertebral bodies of a human spine, said apparatus comprising:  
an expandable spinal implant having upper and lower portions adapted to move apart from one another to contact adjacent upper and lower vertebral bodies, respectively, said implant having an end having an opening, each of said upper and lower portions having a recess, said implant having a plurality of bone screw holes; and  
an implant end cap having a head configured to cooperatively engage said end of said implant to at least in part cover said opening, said head having a top surface and a bottom surface opposite said top surface, said bottom surface having at least one protrusion adapted to cooperatively engage said recesses of said upper and lower portions of said implant to prevent said implant from expanding beyond a predetermined height by limiting movement of said upper and lower portions relative to one another, said bottom surface of said head being configured to cover at least a portion of one of said bone screw holes when said cap is engaged to said implant.
43. (new) An apparatus for insertion within an implantation space formed across the height of a disc space between vertebral bodies of a human spine, said apparatus comprising:

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an expandable spinal implant having upper and lower portions adapted to move apart from one another to contact adjacent upper and lower vertebral bodies, respectively, said implant having an end having an opening, each of said upper and lower portions having at least one protrusion, said implant having a plurality of bone screw holes; and

an implant end cap having a head configured to cooperatively engage said end of said implant to at least in part cover said opening, said head having a top surface and a bottom surface opposite said top surface, said bottom surface having a recess adapted to cooperatively receive said protrusions of said upper and lower portions of said implant to prevent said implant from expanding beyond a predetermined height by limiting movement of said upper and lower portions relative to one another, said bottom surface of said head being configured to cover at least a portion of one of said bone screw holes when said cap is engaged to said implant.